

For a control group in which a cream without cyclosporin was applied, the transplanted skin specimens fell off at an average after transplantation of 12.7 days, while a group in which a cream containing 5% cyclosporin was applied had all the transplanted skin sections grow for 60 days or longer. For a group in which a cream containing 1% cyclosporin was applied, the period of transplantation for which the transplanted skin sections grew was extended with significant difference to a mean of 31.3 days.

EXAMPLE 18

Eight Hartley male guinea pigs weighing approximately 300 grams were intraperitoneally administered 150 mg/kg of cyclophosphamide, and 50 μ l of a 10% dinitrofluorobenzene (DNFB) solution was applied to one earlobe of each guinea pig three days after the intraperitoneal administration. The DNFB solution was prepared by dissolving the predetermined amount of the DNFB in a 1:1 mixture of acetone with olive oil. After 8 days, the hairs on both the abdominal parts were cut off and 20 μ l of a 0.1% DNFB solution was applied to the depilated abdominal parts of the guinea pigs to induce contact dermal allergy. Immediately thereafter, the cyclosporin ointment prepared in substantially the same manner as in Example 15 was applied to the parts to which the DNFB solution had been applied, followed by applying the cyclosporin ointment thereto in 8 hours. To a control group, the base used in Example 15 without cyclosporin was applied in accordance with the same schedule as described hereinabove.

The allergic reaction was determined at 24 hours, 48 hours and 72 hours after the application of the DNFB solution as the antigen, and the rating was: 4=red swelling; 3=red coloration; 2=inflammation causing the skin to turn pink; 1=inflammation causing the skin to turn pale pink; and 0=no change. The results are shown in Table 5 below.

TABLE 5

| Cyclosporin (%) | Severity of Dermal Reaction (mean value \pm SE) | | |
|--------------------|------------------------------------------------------|-----------------|-----------------|
| | 24 hours | 48 hours | 72 hours |
| 1.0 | 0.0 \pm 0.0** | 0.3 \pm 0.2** | 0.1 \pm 0.1** |
| 0.1 | 0.3 \pm 0.3** | 0.9 \pm 0.2** | 0.7 \pm 0.3** |
| 0.0 (control) | 2.2 \pm 0.3** | 3.1 \pm 0.2** | 2.4 \pm 0.2** |

**p < 0.001 in Student's t-test

In these experiments, the strongest allergic reaction was induced over the range extending from 24 hours to 48 hours after the application of the DNFB solution. The ointment containing 1.0% cyclosporin strongly suppressed the allergic reaction and the ointment containing 0.1% cyclosporin suppressed the allergic reaction with significant difference.

What is claimed is:

1. A topical preparation comprising: (a) approximately 0.1 to 10% by weight cyclosporin; (b) an organic solvent in which said cyclosporin is dissolved; and (c) approximately 1% to 15% by weight of a skin penetration enhancer, said skin penetration enhancer being at least one member selected from the group consisting of alkanolamines and monovalent alcohol esters of myris-

tic acid, adipic acid and sebacic acid, said (c) being liquid at 25° C.

2. A topical preparation as claimed in claim 1, wherein said organic solvent is aliphatic alcohol which is liquid at 25° C.

3. A topical preparation as claimed in claim 2, wherein said aliphatic alcohol is a lower alcohol.

4. A topical preparation as claimed in claim 3, wherein said lower alcohol is ethanol.

5. A topical preparation as claimed in claim 2, wherein said aliphatic alcohol is a higher alcohol having a branched chain and at least 8 carbon atoms.

6. A topical preparation as claimed in claim 5, wherein said higher alcohol is 2-octyldodecanol.

7. A topical preparation as claimed in claim 1, wherein said organic solvent is a monoester of a fatty acid with a polyhydric alcohol.

8. A topical preparation as claimed in claim 7, wherein said monoester is propyleneglycol monocatearate or propylene glycol monocaprylate.

9. A topical preparation as claimed in claim 1, wherein said organic solvent is present in an amount ranging from approximately 0.5 part to 10 parts by weight per part by weight of said cyclosporin.

10. A topical preparation as claimed in claim 1 wherein said preparation is an emulsion.

11. A topical preparation as claimed in any one of claims 1, 2, 3, 4, 5, 6, 7, 8 or 9 further comprising a vegetable oil.

12. A topical preparation as claimed in any one of claims 1, 2, 3, 4, 5, 6, 7, 8 or 9 further comprising a surfactant.

13. A topical preparation as claimed in any one of claims 1, 2, 3, 4, 5, 6, 7, 8 or 9 further comprising a filler.

14. A topical preparation as claimed in any one of claims 1, 2, 3, 4, 5, 6, 7, 8 or 9 further comprising at least one of an alkylene glycol and a polyalkylene glycol.

15. A topical preparation comprising: (a) approximately 0.1% to 10% by weight of cyclosporin; (b) approximately 2% to 15% by weight of lower alcohol; and (c) approximately 1% to 15% by weight of a skin penetration enhancer, said skin penetration enhancer being at least one member selected from the group consisting of alkanolamines and monovalent alcohol esters of myristic acid, adipic acid and sebacic acid.

16. A topical preparation as claimed in claim 15, wherein said lower alcohol is at least one member selected from the group consisting of ethanol, isopropanol, propanol and isobutanol.

17. A topical preparation as claimed in claim 15 wherein said preparation is an emulsion.

18. A topical preparation as claimed in claim 15, further comprising from approximately 5% to 10% by weight of a filler.

19. A topical preparation comprising 0.1% to 10% by weight of cyclosporin; 2% to 15% by weight of ethanol; 1% to 15% by weight of isopropyl myristate; 35% to 60% by weight of olive oil or camellia oil; 20% to 40% by weight of a surfactant; and 5% to 10% by weight of silica.

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